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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,401	10/21/2003	Hiroyuki Noguchi	03FI001US	2534
21254	7590	07/19/2005	EXAMINER	
MCGINN & GIBB, PLLC			TRAN, LEN	
8321 OLD COURTHOUSE ROAD			ART UNIT	PAPER NUMBER
SUITE 200				1725
VIENNA, VA 22182-3817			DATE MAILED: 07/19/2005	

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/689,401	NOGUCHI ET AL.	
	Examiner	Art Unit	
	Len Tran	1725	

— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 17 June 2005.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-13 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____. | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 4, 5, 7, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Kashima et al (US 4,163,000).

As to claim 1, Kashima et al disclose a method of casting aluminum (col. 7, line 64-65) comprising the steps of producing a sand mold (col. 6, line 27-28), injecting molten aluminum into the mold, cooling the casting together with the mold by water, and dismantling the mold (col. 7, lines 62-69).

As to claim 2, the cooling step comprises dipping the sand mold together with the casting in water (col. 9, lines 25-31).

As to claim 4 and 5, the sand is dried and reused (col. 9, line 31 and col. 14, lines 11-15).

As to claim 7, the casting prior to cooling is above solidus temperature, since the metal is still molten.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 3, 6, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kashima et al (US '000), and further in view of Sutton et al (US 5,735,334).

As to claim 3, Kashima et al disclose a method of casting aluminum (col. 7, line 64-65) comprising the steps of producing a sand mold (col. 6, line 27-28), injecting molten aluminum into the mold, cooling the casting together with the mold by water, and dismantling the mold (col. 7, lines 62-69), wherein the cooling step comprises dipping the sand mold together with the casting in water (col. 9, lines 25-31).

Kashima et al fail to disclose the steps of producing a unit sand mold within a mold making chamber on a casting line, the sand mold having cavities on front and rear faces thereof in a direction of casting line, connecting a plurality of unit sand molds on the casting line by joining the front face of one unit sand mold to the rear face of the preceding unit sand mold to

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form a train of connected sand mold, injecting molten aluminum into the cavities, and cutting the train of connected sand molds at substantially central portion of each unit sand mold.

However, Sutton et al disclose the steps of producing a unit sand mold within a mold making chamber on a casting line, the sand mold having cavities on front and rear faces thereof in a direction of casting line, connecting a plurality of unit sand molds on the casting line by joining the front face of one unit sand mold to the rear face of the preceding unit sand mold to form a train of connected sand mold (col. 2, lines 14-30, col. 3, lines 36-54) for the purpose of increasing the rate at which casting can be made.

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide successions of mold halves as taught by Sutton et al, in Kashima et al in order to increase production rate.

Furthermore, it would also have been obvious to one of ordinary skill in the art to cut the train of connected sand molds at a substantially central portion of each unit sand mold, since both sides of the mold are cavities, which only leaves the center of the mold to be cut. If the cutting was to take place at anywhere other than the center, then the casting will be defective. Therefore, one of ordinary skill in the art would have readily acknowledged the only part of the mold to be cut is the center of the mold.

As to claim 6, Kashima et al disclose the sand is dried and reused (col. 9, line 31 and col. 14, lines 11-15).

As to claim 8, the casting prior to cooling is above solidus temperature, since the metal is still molten.

6. Claims 1 and 9-11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sutton et al (US '334), and further in view of George et al (US 3,749,151).

Sutton et al disclose a method of casting aluminum comprising the steps of producing a sand mold, injecting molten metal into the mold, cooling the casting together with the mold by water (col. 5, lines 43-44).

However, George et al disclose a vibrating mean (38) for the purpose of facilitating the piercing of the mold (col. 2, lines 3-8).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide a vibrating mean as taught by George et al, in Sutton et al, in order to facilitate removal of the casting.

In addition, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to spray water, since Sutton et al disclose using water as the main source for cooling. Whether spraying or circulating, it would have been obvious to an ordinary skill in the art to modify the equipment.

Response to Arguments

7. Applicant's arguments filed 6/17/05 have been fully considered but they are not persuasive.

As to pages 6 and 7, applicant mainly argues that Kashima fail to teach “cooling a casting thus obtained together with the sand mold by at least one of water or a coolant”. Examiner respectfully disagrees. As previously argued by examiner on March 17, 2005, there exists two cooling steps. The first cooling step is acknowledged by applicant and the second cooling step, dipping in water, is traversed by applicant. However, dipping in water serves the function of disintegrating the sand mold as well as cooling the sand mold and the cast product. The sand mold is conventionally dipped in cool water. Therefore, after the cast product in the mold has been cooled, the casting inside the mold are both dipped in water to disintegrate the sand mold and also the casting is further cooled.

In response to section B, pages 7 and 8, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Sutton et al disclose the steps of producing a unit sand mold within a mold making chamber on a casting line, the sand mold having cavities on front and rear faces thereof in a direction of casting line, connecting a plurality of unit sand molds on the casting line by joining the front face of one unit sand mold to the rear face of the preceding unit sand mold to form a train of connected sand mold (col. 2, lines 14-30, col. 3, lines 36-54) for the purpose of increasing the rate at which casting can be made. Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's

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invention was made to provide successions of mold halves as taught by Sutton et al, in Kashima et al in order to increase production rate.

In response to section C, pages 8 and 9, In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Sutton et al disclose a method of casting aluminum comprising the steps of producing a sand mold, injecting molten metal into the mold, cooling the casting together with the mold by water (col. 5, lines 43-44). However, George et al disclose a vibrating mean (38) for the purpose of facilitating the piercing of the mold (col. 2, lines 3-8). Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide a vibrating mean as taught by George et al, in Sutton et al, in order to facilitate removal of the casting. In addition, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to spray water, since Sutton et al disclose using water as the main source for cooling. Whether spraying or circulating, it would have been obvious to an ordinary skill in the art to modify the equipment.

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8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Len Tran whose telephone number is (571) 272-1184. The examiner can normally be reached on M-F, 8:30 - 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Len Tran
Examiner
Art Unit 1725

LT
July 14, 2005